Minnelusa Summary

Glen Murrell

Presentation to the TAB Meeting, July 24th, 2013
Agenda

• Introduction
• Status and Work-plans
  • Timber Creek
  • Gibbs/W. Gibbs
  • Little Mitchell Creek
• Consortium Partner(s) and Contributions
• Technology Transfer
• Takeaways
Introduction

• Projects are resulting in new development and new production.
• Highly valuable case-studies.
• New relationships – Operators and service providers.
• Competition for resources – mostly related to unconventionals
Goals

- Drill new wells
- Expand and optimize existing waterfloods
- Improve characterization
- Add new projects/partners
- Field demonstrations
Status - Timber Creek

- PM: Shaochang
- Static Model: Complete
- Dynamic Sim: Complete
- Gene George 1 drilled and cored. Currently converting to injector
- Workover Scenarios - complete
- Special Core Analysis - complete
- ASP blend optimization - complete
- Model re-visit - underway
Work-plan - Timber Creek

- Monitoring workover scenarios.
  - Tremendously successful. See Shaochang’s report later today.
- Model is being updated.
  - May be potential for further refinement.
Status - Gibbs

• PM: Aboozar
• Static Model: Complete
• Dynamic Sim: Complete
• Workover Scenarios: The workovers on the Gibbs 42-8 and 22-16 were successful with the 42-8 well injecting 450 BWPD under 1420 psi tubing pressure and the 22-16 well injecting 290 BWPD under 800 psi tubing pressure.
• Entering phase of monitoring and verification
Currently monitoring workovers. Shifting attention to West Gibbs
Status – West Gibbs

• PM: Aboozar
• Driven by attractiveness of W. Gibbs as possible pilot study
• Reporting later today
• EORI will recommend new development (In-fill drilling)
• Additional characterization necessary for field pilot.
• Plan and implement a SWTT.
Status – Little Mitchell Creek

- PM: Shuiquan
- Seismic interpretation: Complete
- Static Model: Complete
- Dynamic Sim: Commenced
Work-plan - Little Mitchell Creek

• Completion of history match and evaluation of development scenarios.
  • Scheduled for completion end-2013
  • Two new wells under consideration.
  • EORI will recommend evaluation of core from first new well.
• Preliminary CEOR blend (fluid compatibility) work scheduled to start August 2013.
• Dow expressed interest in being a consortium partner providing analytical support to the consortium to address obvious Minnelusa/ChemEOR challenges.
• They have conducted work on the anhydrite problem by attempting to developing a non-alkaline SP flood using ultra-low IFT, non-ionic surfactants.
• Results are not available yet (held up by internal issues at DOW), but preliminary discussions are not positive.
Consortium Partner – Linde AG

- Linde expressed interest in being a consortium partner providing analytical support to the consortium.
- They have access, via one of their industrial partnerships, to simulation capabilities and wish to use the TC sim to build baseline comparisons of different gas injection projects (e.g. CO2-misc-WAG, CO2-misc-GS, N-immisc-GDD,....)
Consortium Partner – Ballard

• Steve Fryberger (EORI Consultant) made use of his contacts and was able to secure access to some of Ballard’s proprietary seismic datasets.
• Currently determining how to make best use of it.
Technology Transfer

• Minnelusa I
  • Held May 6&7, Gillette, WY
  • Covered fundamentals, geology, waterflooding, exploration, geophysics, historic and potential IOR/EOR practices.
  • Well attended, well received.
  • Enabled contact with several new partners: Ballard, Citation, Resolute. Great potential for collaboration with each.
  • Many of the participants expressed interest in Minn I being repeated for their more junior staff.

• Minnelusa II
  • Will likely be more focused on EOR.
  • May include field trip. Spring 2014
Consortium Expansion

• New operators?
  • How to incorporate new operators without diluting contribution of original members
  • New members will need to contribute something new and substantial
  • Resources!!

• New fields?
  • Current members have nominated new fields for analysis
  • Resources!!

• New partners?
  • Dow, Linde.
  • Other potential partners?
  • Praxair? Glori Oil? Baker Hughes?
Questions?

Glen Murrell
gmurrell@uwyo.edu
307 766 2843